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PATENT APPLICATION

Docket: 14531.70

PATENT

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MAILING ADDRESS:

P.O. BOX 45862

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INTERNET

HOME PAGE: <http://www.wnspat.com>

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Box: PATENT APPLICATION

Assistant Commissioner for Patents

Washington, DC 20231

TRANSMITTAL FOR PATENT APPLICATION

Sir:

Transmitted herewith for filing under 37 C.F.R. § 1.53(b) is a United States patent application entitled SERVER-SIDE SCRIPTING THAT ENABLES CREATION OF CUSTOMIZED DOCUMENTS FOR CLIENTS in the name of the following inventor:

Inventor: Michael A. Cleron
Citizenship: United States
Address: 1160 Klamath Drive
Menlo Park, California 94025

Inventor: Erik Fortune
Citizenship: United States
Address: 2053 Grant Road
Los Altos, California 94024

Inventor: Lennart Löfstrand
Citizenship: Switzerland
Address: 101 Landers Street
San Francisco, California 94114

Inventor: Steve R. Sandke
Citizenship: United States
Address: 11093 Wilkinson Avenue
Cupertino, California 95014

RICK D. NYDEGGER
DAVID O. SEELEY
BRENT P. LORIMER
THOMAS R. VUKSINICK
LARRY R. LAYCOCK
JONATHAN W. RICHARDS
DAVID R. WRIGHT
JOHN C. STRINGHAM
BRADLEY K. DESANDRO
JOHN M. GUYNN
CHARLES L. ROBERTS
GREGORY M. TAYLOR
DANA L. TANGREN
KEVIN B. LAURENCE
ERIC L. MASCHOFF
C. J. VEVERKA
ROBYN L. PHILLIPS
RICHARD C. GILMORE†
DAVID B. DELLENBACH

KEVIN K. JOHANSON
L. DAVID GRIFFIN
R. BURNS ISRAELSEN
DAVID R. TODD
FRASER D. ROY
CARL T. REED
JESÚS JUANÓS I TIMONEDA, Ph.D.
STEPHEN D. PRODNUK, Ph.D.
R. PARRISH FREEMAN, Jr.
PETER F. MALEN, Jr.
ADRIAN J. LEE
KYLE H. FLINDT
DAVID B. TINGEY
L. REX SEARS

†ADMITTED ONLY IN CALIFORNIA

H. ROSS WORKMAN
OF COUNSEL

U.S. PTO
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06/30/00

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06/30/00
JCS650 S. PTO

WORKMAN
NYDEGGER
& SEELEY

ATTORNEYS AT LAW

A PROFESSIONAL CORPORATION

1000 EAGLE GATE TOWER

60 EAST SOUTH TEMPLE

SALT LAKE CITY, UTAH 84111

TELEPHONE (801) 533-9800

FACSIMILE (801) 328-1707

Enclosed are the following:

- X A specification, claims, abstract, and cover page in total comprising forty-five (45) pages.
- X Four (4) sheets of drawings.
- An Assignment conveying the invention to _____, including a Form PTO-1595 recordation cover sheet.
- A Declaration Claiming Small Entity Status pursuant to 37 C.F.R. § 1.9 and § 1.27.
- X A Certificate of Mailing by "Express Mail" certifying a filing date by use of Express Mail Label No. EL624147333US.
- Priority to _____ (country) Application Serial No. _____ filed on _____ is claimed under 35 U.S.C. § 119.
- A certified copy of foreign priority application Serial No. _____.
- An Associate Power of Attorney.

The filing fee has been calculated as shown below.

			SMALL ENTITY		LARGE ENTITY	
FOR	NO. FILED	NO. EXTRA	RATE	FEE	RATE	FEE
BASIC FEE				\$345		\$690
TOT. CLAIMS	33 - 20=	13	X 9=		X 18=	\$234
IND. CLAIMS	5 - 3=	2	X 39		X 78=	\$156
MULTIPLE DEPENDENT CLAIM			+130=		+260=	
			TOTAL		TOTAL	\$1080

- X Check No. 116381 in the amount of \$876.00 is enclosed to cover:
- X The \$1,080.00 government filing fee.
- The \$40.00 recordation fee of the enclosed assignment.
- X Please debit Deposit Account No. 23-3178 in the amount of \$204.00 for the government filing fee.

- Please debit Deposit Account No. 23-3178 in the amount of \$40.00 for recordation of the enclosed Assignment.
- X The Commissioner is hereby authorized to charge payment of the following fees associated with this communication or credit any overpayment to Deposit Account No. 23-3178.
- X Any additional filing fees required under 37 C.F.R. § 1.16.
- X Any patent application processing fees under 37 C.F.R. § 1.17.
- X The Commissioner is hereby authorized to charge payment of the following fees during the pendency of this application or credit any overpayment to Deposit Account No. 23-3178.
- X Any filing fees under 37 C.F.R. § 1.16 for presentation of extra claims.
- X Any patent application processing fees under 37 C.F.R. § 1.17.
- The issue fee set forth in 37 C.F.R. § 1.18 at or before mailing of the Notice of Allowance, pursuant to 37 C.F.R. § 1.311(b).
- X A duplicate copy of this letter is enclosed.

Please address all future correspondence in connection with the above-identified patent application to the attention of the undersigned.

Dated this 30th day of June 2000.

Respectfully submitted,



CARL T. REED
Attorney for Applicant
Registration No. 45,454

WORKMAN, NYDEGGER & SEELEY
1000 Eagle Gate Tower
60 East South Temple
Salt Lake City, Utah 84111
Telephone: (801) 533-9800
Facsimile: (801) 328-1707

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Date of Deposit: June 30, 2000

CERTIFICATE OF MAILING BY "EXPRESS MAIL"

I hereby certify that the following documents are being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 C.F.R. § 1.10 on the date indicated below in an envelope addressed to Box: PATENT APPLICATION, Assistant Commissioner for Patents, Washington, DC 20231:

- Patent Application in the names of Michael A. Cleron, Erik Fortune, Lennart Lövstrand, Steve R. Sandke for SERVER-SIDE SCRIPTING THAT ENABLES CREATION OF CUSTOMIZED DOCUMENTS FOR CLIENTS (45) pages)
- Drawings (4 sheets)
- Transmittal Letter (3 pages) (in duplicate)
- Check No. 116381 for \$876.00
- Postcard

Dated this 30th day of June 2000.

Respectfully submitted,

Carl Reed

CARL T. REED
Attorney for Applicant
Registration No. 45,454

WORKMAN, NYDEGGER & SEELEY
1000 Eagle Gate Tower
60 East South Temple
Salt Lake City, Utah 84111
Telephone: (801) 533-9800
Facsimile: (801) 328-1707

CTR:dfw

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In view of the foregoing, the server-side scripting of the invention enables customized documents to be efficiently created at runtime for particular clients. Customization systems using the invention can be scaled to any number of user criteria and different versions of content with only a minimal increase, if any, in the complexity of the server applications and associated scripts.

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1000 EAGLE GATE TOWER
60 EAST SOUTH TEMPLE
SALT LAKE CITY, UTAH 84111

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60 EAST SOUTH TEMPLE
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1000 EAGLE GATE TOWER
60 EAST SOUTH TEMPLE
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1 special purpose computer, or special purpose processing device to perform a certain
2 function or group of functions.

3 Figure 1 and the following discussion are intended to provide a brief, general
4 description of a suitable computing environment in which the invention may be
5 implemented. Although not required, the invention will be described in the general context
6 of computer-executable instructions, such as program modules, being executed by
7 computers in network environments. Generally, program modules include routines,
8 programs, objects, components, data structures, etc. that perform particular tasks or
9 implement particular abstract data types. Computer-executable instructions, associated
10 data structures, and program modules represent examples of the program code means for
11 executing steps of the methods disclosed herein. The particular sequence of such
12 executable instructions or associated data structures represent examples of corresponding
13 acts for implementing the functions described in such steps.

14 Those skilled in the art will appreciate that the invention may be practiced in
15 network computing environments with many types of computer system configurations,
16 including personal computers, hand-held devices, multi-processor systems,
17 microprocessor-based or programmable consumer electronics, network PCs,
18 minicomputers, mainframe computers, and the like. The invention may also be practiced
19 in distributed computing environments where tasks are performed by local and remote
20 processing devices that are linked (either by hardwired links, wireless links, or by a
21 combination of hardwired or wireless links) through a communications network. In a
22 distributed computing environment, program modules may be located in both local and
23 remote memory storage devices.

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In this example, it is assumed that a server 140 of Figure 3 receives a request from a client 100 for a home page document of a Web site that is to be customized to include information tailored to the attributes of client 100 and a user of the client. The original script 146 (also represented by elements 162, 163, and 164 of Figure 4) selected by server application 144 is one which corresponds to a basic template for constructing the requested document. The original script could be:

```
<% resolve Strings %>
<% resolve Screen %>
    <% template Main %>
        <% call Banner %>
        <% call HelloText %>
        Enjoy Your Visit
    <% end-template %>
```

Docket No. 14531.70

If the decision criteria indicate that the string files 150a are to be resolved using the language and country of the user of client 100, the decision engine 148 accesses an appropriate attribute provider 152 and identifies the language and country of the user, which may be stored in a database containing user profile information. For instance, the decision engine may learn that the user is associated with language and country attributes designated by “en-US” (English in the United States), in which case, the decision engine identifies the string file 150a that is for use with “en-US.” Isolating the decision criteria from script 144 in this manner enables the administrator of server 140 to add support for other languages and countries by adding new content files 150a (e.g., ja-JA: Japanese in Japan) and editing the decision criteria as necessary without changing script 144.

Docket No. 14531.70

Server application 144 of Figure 4 continues to process the original script and encounters a “Template” statement, which indicates that the nested code represents instructions for generating a document or a portion thereof. In this example, the original nested contents of the “template Main” statement include a “Call” statement and specific content to be included in the generated document. The statement “call Banner” represents an example of request 163 of Figure 4, “call HelloText” represents an example of request 162, and **“Enjoy Your Visit”** represents an example of content 164. Attention will now be directed to the processing initiated by the statements “call Banner” and “call HelloText”. Because the initial stage of the process of creating the customized document relates to resolving files and concatenating portions of script, specific content, such as **“Enjoy Your Visit”** is not processed at this stage, but is instead used after the script has been assembled to create the document.

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1 **FooTV [Image]**

2 <% end-template %>

3 <% end-template %>

4 <% call AffinityImage %>

5 **Welcomes You**

6 <% end-template %>

7 **Enjoy Your Visit**

8 <% end-template %>

9 At this point, server application 144 has traversed the script to a portion of script
10 (e.g., the content that corresponds to element 178 in the hierarchical model of Figure 4)
11 that has no child node. In this case, server application advances to the next portion of
12 script that has not yet been processed, namely, the Call statement “call AffinityImage”.
13 This Call statement corresponds to the request element 170 of Figure 4, and results in a
14 request to decision engine 148 for the appropriate content designated by “AffinityImage”.
15 Decision engine 148 then selects the suitable “AffinityImage” content from image content
16 file 150c, which has been previously resolved. In this example, decision engine 148
17 returns to server application 144 a supplemental portion of script that has been found to
18 correspond to “AffinityImage” in the specified image content file 150c:

19 **Supplemental Script E (from Images.jnx)**

20 <% template AffinityImage %>

21 **Human Fund [Image]**

22 <% end-template %>

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1 application encounters the "Resolve" statement in the script and the method advances to
2 act 196.

3 In act 196, and in response to the Resolve statement, the server application issues a
4 request to the decision engine to resolve, or identify, content files 150 of Figure 3 that are
5 appropriate for client 100 based on whatever criteria are designated at decision engine 148.

6 In act 198, the contents of the resolved file are concatenated with the original script,
7 such that the original script is assembled at runtime. In act 200, the resolved file is added
8 to the list of files that remain to be processed. In this manner, any additional "Resolve"
9 statements or other statements that require the decision engine to perform decisions can be
10 processed during the assembly of the script. So long as there remain unprocessed files and
11 unprocessed resolve statements, the method returns to acts 196, 198, and 200 until the
12 content files have been resolved and the portions of script contained in the content files are
13 concatenated with the original script. Based on the contents of the original script, the
14 content files, and the decision criteria employed by the decision engine, decision blocks
15 192 and 194 and acts 196, 198, and 200 result in the creation, at runtime, of a script that is
16 adapted specifically to generate a document that is customized for the particular client and
17 user to which it will be transmitted. At act 202, the assembled script is executed so as to
18 generate the code, such as HTML code, that is to be transmitted to the client.
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22 The present invention may be embodied in other specific forms without departing
23 from its spirit or essential characteristics. The described embodiments are to be considered
24 in all respects only as illustrative and not restrictive. The scope of the invention is,

therefore, indicated by the appended claims rather than by the foregoing description. All changes which come within the meaning and range of equivalency of the claims are to be embraced within their scope.

What is claimed and desired to be secured by United States Letters Patent is:

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1000 EAGLE GATE TOWER

60 EAST SOUTH TEMPLE
SALT LAKE CITY, UTAH 84111

1. In a server included in a network that also includes a client associated with specified attributes, a method of using a decision engine to create a document for use by the client, the document being customized according to the specified attributes associated with the client, the method comprising the acts of:

processing code associated with a script at the server, including code that, when executed, requests the decision engine to select content for the document based on at least one attribute of the client;

receiving from the decision engine an identification of the content that has been selected by the decision engine;

creating the document and incorporating into the document the content that has been selected by the decision engine; and

transmitting the document to the client.

2. A method as recited in claim 1, wherein the act of receiving the identification of the content comprises the act of receiving additional script that, when executed, results in the content being incorporated into the document.

3. A method as recited in claim 2, further comprising the act of assembling the script at runtime by concatenating said portion of script and said additional script.

4. A method as recited in claim 1, wherein:

the act of processing code associated with the script is performed by a server application operating at the server; and

requesting the decision engine to select content for the document based on attributes of the client is conducted without the server application communicating to the decision engine a value of said at least one attribute of the client.

5. A method as recited in claim 4, wherein requesting the decision engine to select content for the document based on attributes of the client is further conducted without the server application communicating to the decision engine criteria by which the decision engine is to select the content.

6. A method as recited in claim 1, wherein the document is a Web page.

7. A method as recited in claim 6, wherein the content comprises at least one of text and an image that are determined to be appropriate for the client.

8. A method as recited in claim 6, wherein the content comprises formatting that is determined to be appropriate for the client.

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11. A method as recited in claim 9, wherein the act of processing the first portion of the script and the second portion of the script comprises the act of receiving content selected by the decision engine to be appropriate for the client based on the at least one attribute of the client.

12. A method as recited in claim 9, further comprising the act of receiving a request from the client for the document.

13. A method as recited in claim 12, further comprising the act of transmitting the created document to the client.

14. A method as recited in claim 9, further comprising the act of the decision engine selecting the second portion of the script, including:

identifying, independently of a server application that executes the script, decision criteria that are to be used by the decision engine to select the second portion; and

identifying, independently of the server application, the at least one attribute of the client that is to be used by the decision engine to select the second portion.

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16. In a server included in a network that also includes a client associated with specified attributes, a method of changing a process whereby documents are customized for clients based on specified attributes of the clients without altering a script that is used by the client to create the documents, comprising the acts of:

storing a script at the server that, when processed, requests a decision engine to select content for a document for a client based on at least one attribute of the client;

storing a content directory at the server that includes:

information specifying decision criteria that are used by the decision engine when selecting content; and

content files that include content that can be selected by the decision engine based on the decision criteria and the at least one attribute of the client; and

in response to a decision to modify documents that are to be made available to clients, altering at least one of the information specifying decision criteria and the content files without altering the script.

17. A method as recited in claim 16, further comprising:

prior to the act of altering, executing the script at the server and generating a first document for a particular client; and

after the act of altering, executing the script at the server and generating a different, second document for the particular client.

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1 24. A method as recited in claim 22, wherein the act of executing the script
2 results in creation of an HTML document that includes the particular content.

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4 25. A method as recited in claim 22, wherein the act of processing the resolve
5 statement is conducted such that the decision engine selects the content file that has content
6 determined to be appropriate from among a plurality of available content files.

7
8 26. A method as recited in claim 25, wherein the act of processing a call
9 statement in the script is conducted such that the decision engine selects the particular
10 content from the selected content file, wherein others of the plurality of available content
11 files have different versions of the particular content.

script based on at least one of the specified attributes without the script identifying said at least one specified attribute; and

receiving from the decision engine the requested third portion of the script
and concatenating the third portion of the script and the second portion of the script
and the first portion of the script.

29. A computer program product as recited in claim 27, wherein the act of receiving from the decision engine the requested second portion of the script comprises the act of receiving content selected by the decision engine to be appropriate for the client based on the at least one attribute of the client.

30. A computer program product as recited in claim 27, wherein the method further comprises the act of receiving a request from the client for the document.

31. A computer program product as recited in claim 30, wherein the method further comprises the act of transmitting the created document to the client.

32. A computer program product as recited in claim 27, wherein the method further comprises the act of the decision engine selecting the second portion of the script, including:

identifying, independently of a server application that executes the script,
decision criteria that are to be used by the decision engine to select the second
portion; and

1 identifying, independently of the server application, the at least one attribute
2 of the client that is to be used by the decision engine to select the second portion.
3

4 33. A computer program product as recited in claim 32, wherein the act of the
5 decision engine selecting the second portion of the script further includes applying the
6 decision criteria to the at least one attribute to select said second portion of script from
7 among a plurality of portions of script.
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1000 EAGLE GATE TOWER
60 EAST SOUTH TEMPLE
SALT LAKE CITY, UTAH 84111

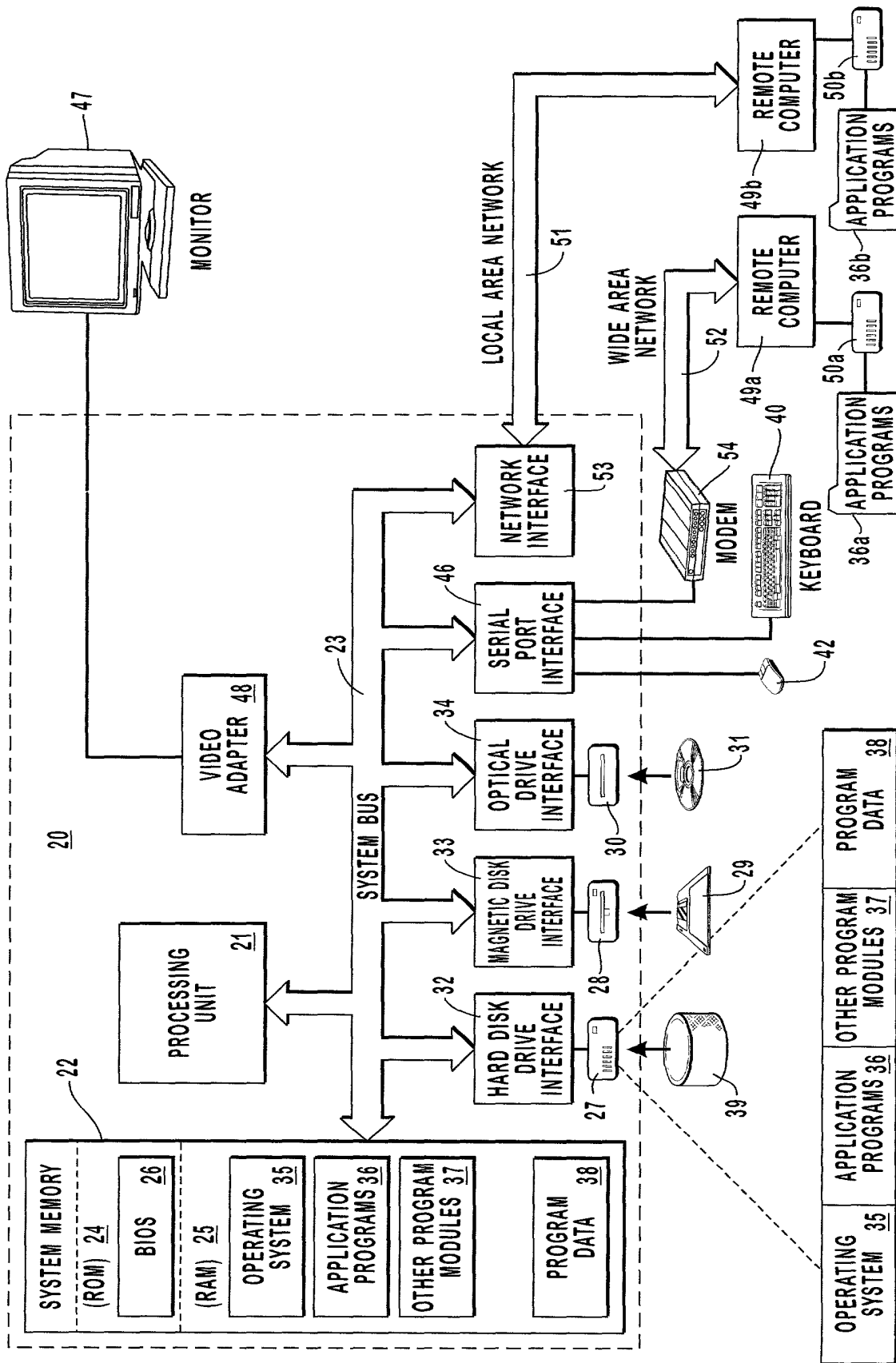


FIG. 1

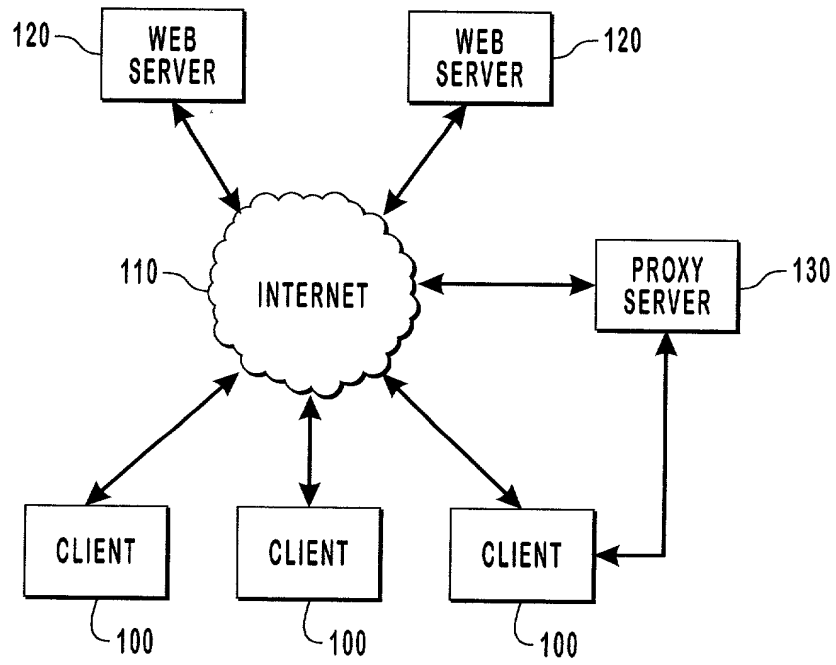


FIG. 2

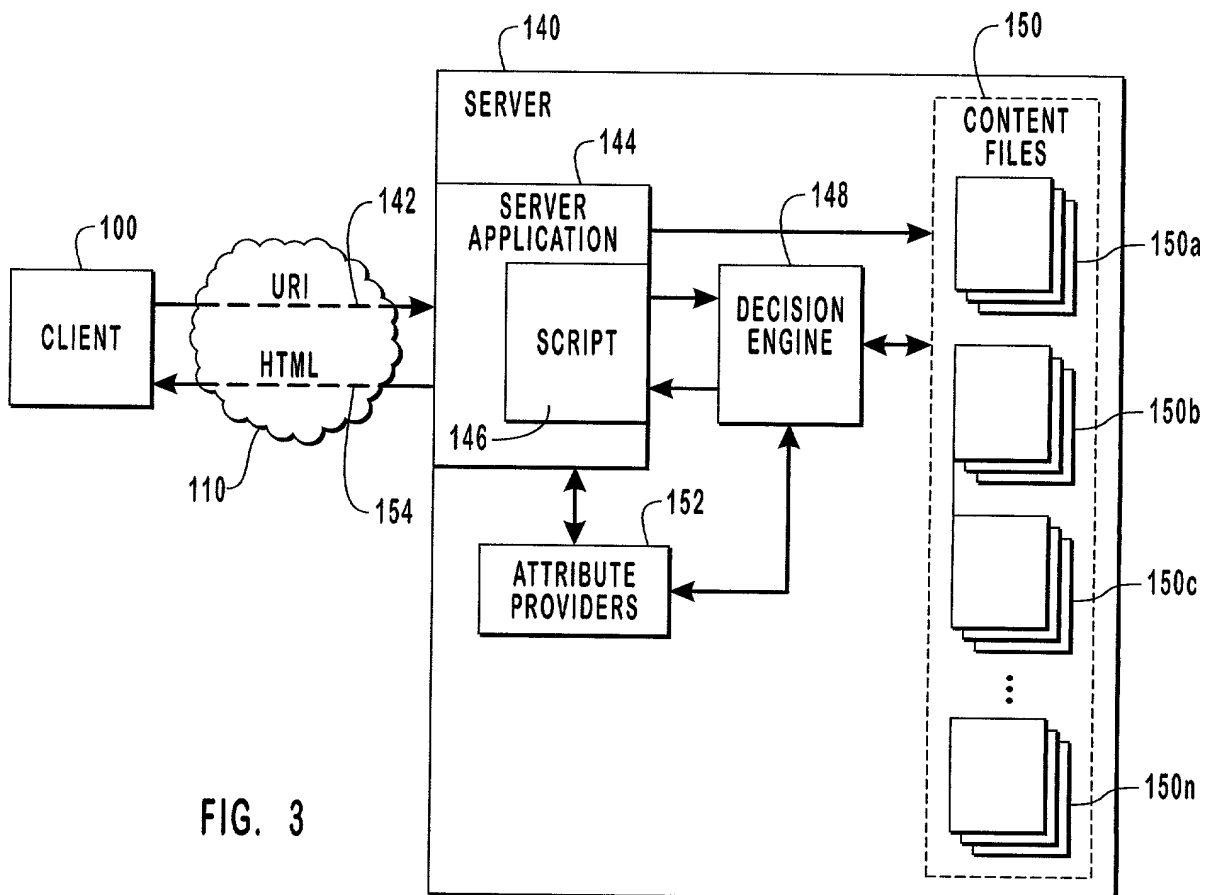


FIG. 3

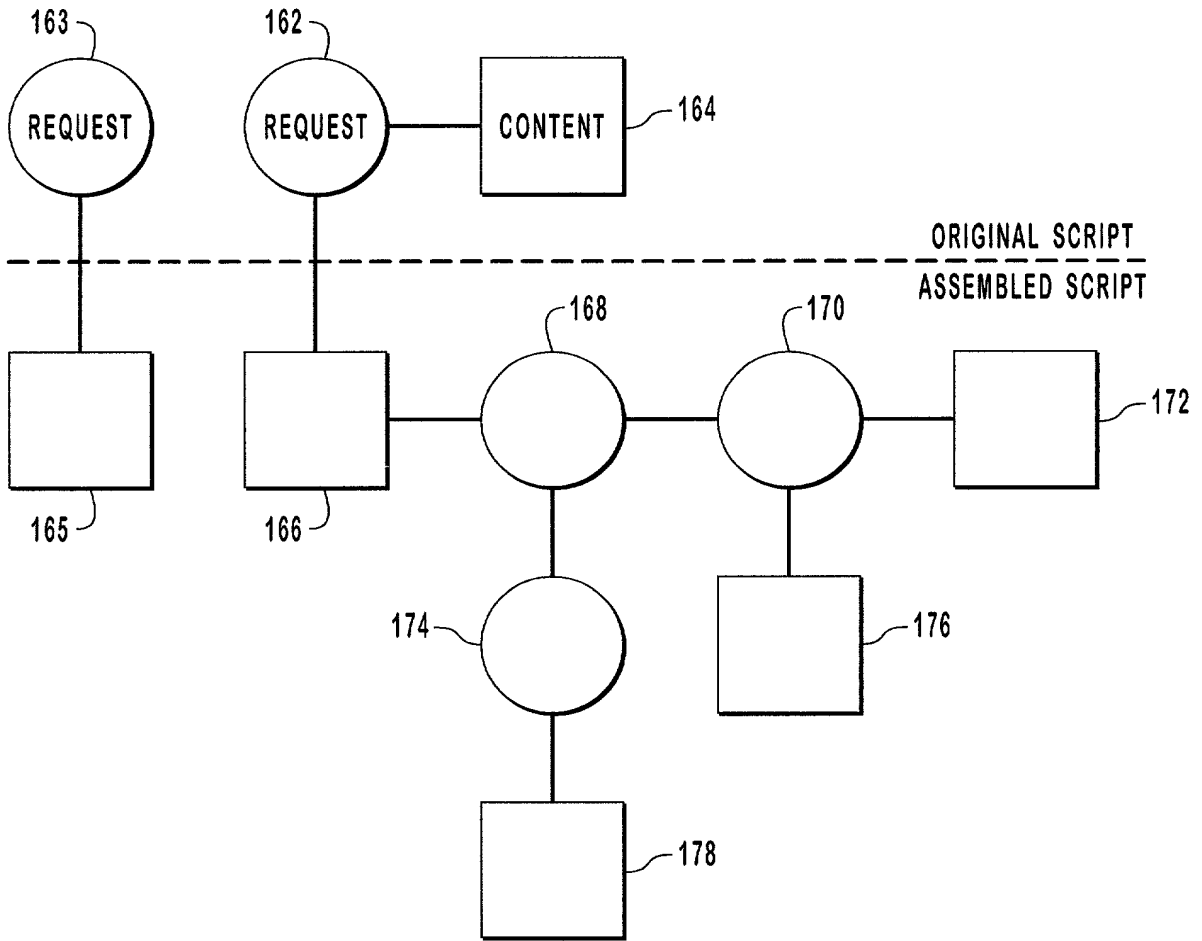


FIG. 4

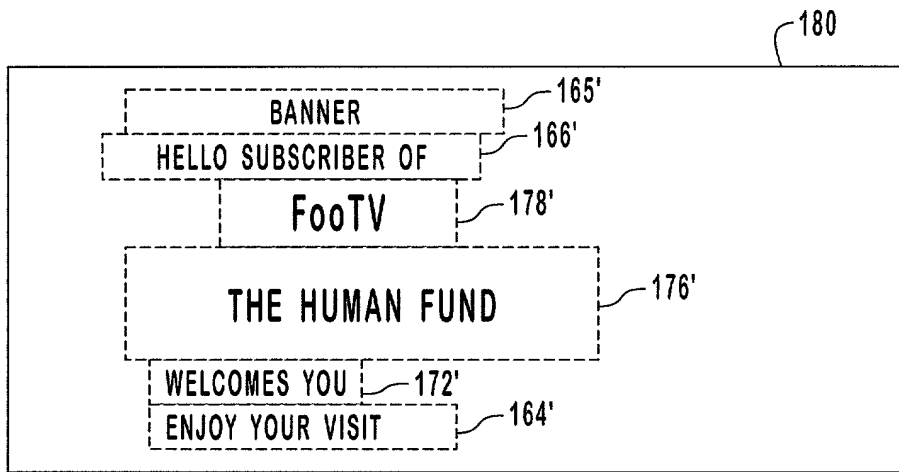


FIG. 5

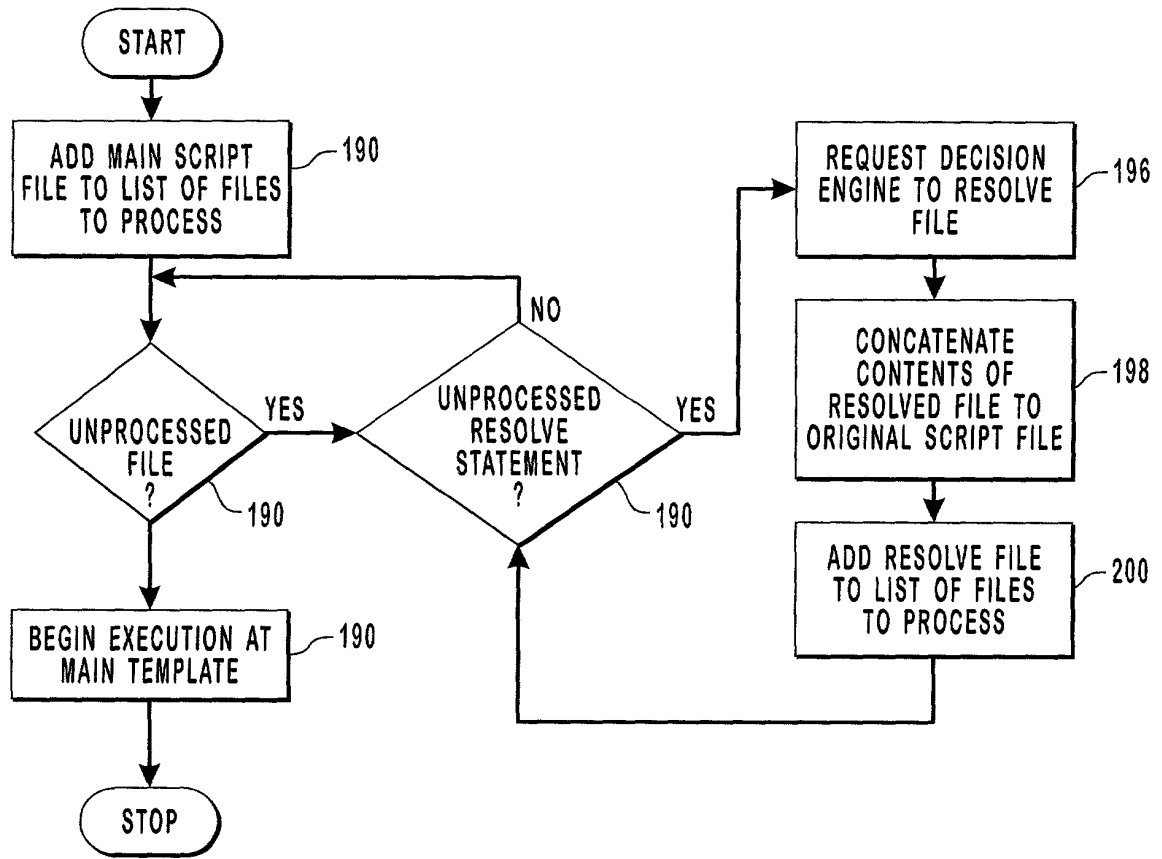


FIG. 6